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*FROM THE MAKERS OF **WOLFRAM LANGUAGE** AND **MATHEMATICA***

WolframAlpha

$\sqrt{i}$

Assuming i is the imaginary unit

Input

$\sqrt{i}$

Exact result

$$\sqrt[4]{-1}$$

Decimal approximation

0.707106781186547524400844362104849039284835937688474036588339867…
8995366239… +

0.707106781186547524400844362104849039284835937688474036588339867…
8995366239… i

More digits

Alternate complex forms

$$\frac{1}{\sqrt{2}} + \frac{i}{\sqrt{2}}$$

Approximate form

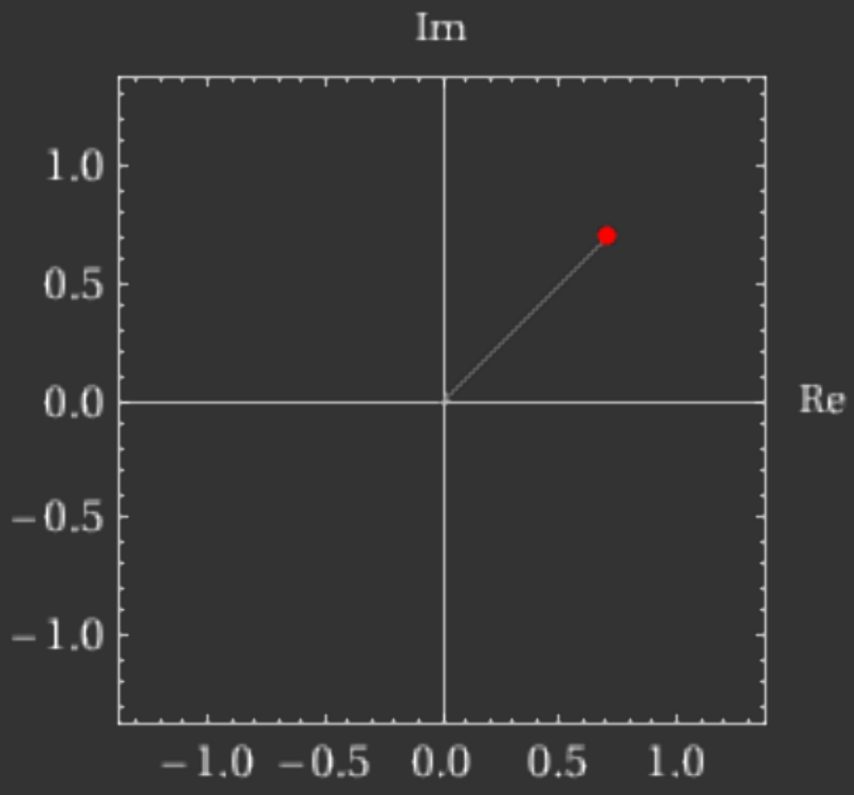
$$\frac{1}{\sqrt{2}} + \frac{i}{\sqrt{2}}$$

Approximate form

$$\frac{1}{\sqrt{2}} + \frac{i}{\sqrt{2}}$$

Approximate form

Position in the complex plane



Polar coordinates

Radians

$r = 1$ (radius), $\theta = \frac{\pi}{4}$ (angle)

Approximate forms

Alternate form

$\frac{1+i}{}$

$\sqrt{2}$

Continued fraction

$[1 + i; -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
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$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i,$
$2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i, -2 + 2i, 2 + 2i]$

(using the Hurwitz expansion)

Fewer terms | Fraction form

All 2nd roots of i

Trigonometric form

$e^{(i\pi)/4} = \cos\left(\frac{\pi}{4}\right) + i \sin\left(\frac{\pi}{4}\right) \approx$

0.707106781186547524400844362104849039284835937688474036588339868…
995366239231053519425193767163820786367506923115456148512462418 0…
279253686063220607485499679157066113329637527963778999752505763 9…
103028573505477998580298513726729843100736425870932044459930477 6…
16461524215435716073 +

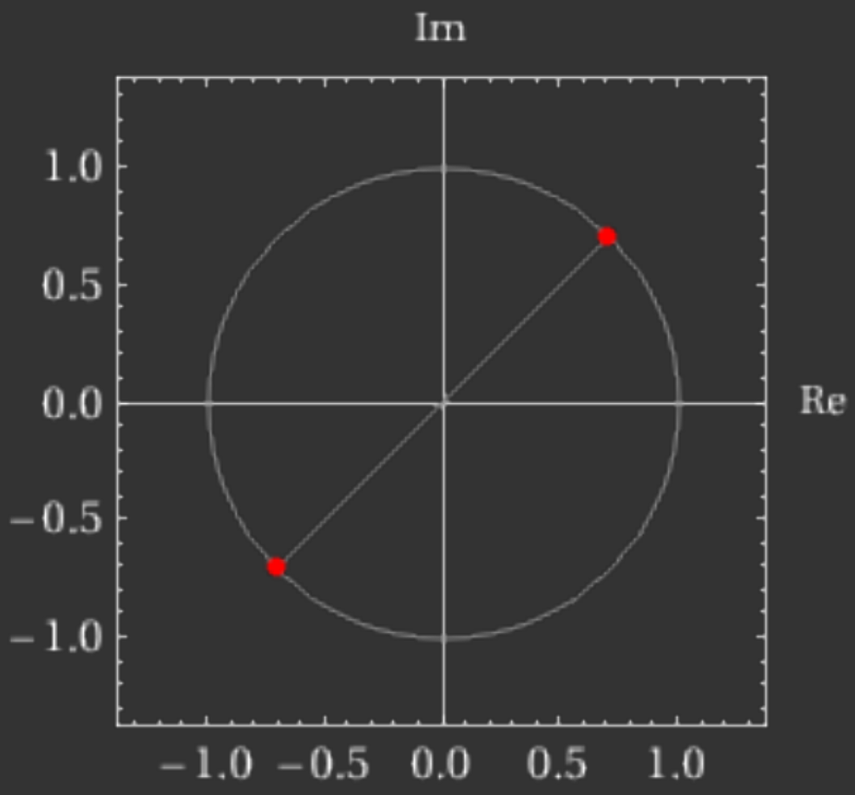
0.707106781186547524400844362104849039284835937688474036588339868…
995366239231053519425193767163820786367506923115456148512462418 0…
279253686063220607485499679157066113329637527963778999752505763 9…
103028573505477998580298513726729843100736425870932044459930477 6…
16461524215435716073 i (principal root)

$$e^{-(3\,i\,\pi)/4} = \cos\left(-\frac{3\,\pi}{4}\right) + i\,\sin\left(-\frac{3\,\pi}{4}\right) \approx$$

$-0.70710678118654752440084436210484903928483593768847403658833\cdot\cdot\cdot$
$86899536623923105351942519376716382078636750692311545614\cdot\cdot\cdot$
$12462418027925368606322060748549967915706611332963752796\cdot\cdot\cdot$
$78999752505763910302857350547799858029851372672984310073\cdot\cdot\cdot$
$25870932044459930477616461524215435716\cdot\cdot\cdot$
$-0.70710678118654752440084436210484903928483593768847403658833\cdot\cdot\cdot$
$98689953662392310535194251937671638207863675069231154561\cdot\cdot\cdot$
$48512462418027925368606322060748549967915706611332963752\cdot\cdot\cdot$
$79637789997525057639103028573505477998580298513726729843\cdot\cdot\cdot$
$10073642587093204445993047761646152421543571607\,i$

More digits

Plot of all roots in the complex plane



POWERED BY THE **WOLFRAM LANGUAGE**

Related Queries:

i^2 =

solve i^x = x =

i!! =

i^i^i =

keys used typing "why would you ever do calculus" =

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